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TECHNICAL MEMORANDUM

TO: **Will Ernst, Mike Gleason (Boeing)** **Date: February 20, 2007**

FR: **Ian Young (Golder)** **Job No.: 013-1646.004.400**

RE: **Boeing Plant 2, Building 2-10 New Foundations Excavation Summary**

Introduction and Summary

Boeing completed excavations for the Water Jet, Composite Saw, and 5-Axis, and 3-Axis machinery foundations in Building 2-10 at Plant 2 during 2006. This memorandum presents the results of field monitoring and analytical testing of soils conducted during the excavation activities.

Construction support activities included visual inspections and field monitoring of the excavations during construction. The foundation excavations are described below and the locations are shown on the attached Figure 1.

Composite Saw Foundation

Excavation for the Composite Saw foundation was conducted in Building 2-10 near Column G35 during March 2006. Soil was excavated to a depth not exceeding 2 feet below ground surface (bgs), the approximate depth of the baserock underlying the building floor.

Axis Machinery Foundations

Two axis machinery foundations were excavated during July 2006 in Building 2-10, including the 3-Axis foundation near Column F35, and the 5-Axis foundation between Columns F31 and F33. Excavation at the 3-Axis foundation did not exceed a depth of 2 feet bgs, the approximate depth of the baserock underlying the building floor. Excavation at the 5-Axis foundation extended to depths generally varying between 2.5 and 4.5 feet bgs, with the deepest point in the center of the excavation at 5 feet bgs.

Water Jet Foundation

Excavation for the Water Jet foundation was conducted during September 2006 in Building 2-10 between Columns G39 and G37. Soil was excavated to a general depth of 2 feet bgs for most of the foundation, but to a maximum depth of 4 feet bgs in the southeast portion of the foundation. The excavation also included minor utility trenching to a depth no greater than 1 foot bgs and did not extend beyond baserock underlying the building floor.

Soil Sampling and Excavation Monitoring

The soil sampling and monitoring were conducted to support worker health and safety and soil characterization for disposal purposes, in accordance with Golder's Technical Memorandum "Rev 1 Boeing Plant 2, Building 2-10, New Foundation Excavations" dated February 9, 2006. Field monitoring of the excavations included visual monitoring of the soils for color changes or staining,

olfactory monitoring of the soils for odors, checking the soils for sheens, and using a photoionization detector (PID) to monitor the soils for VOCs. No staining, sheens, odors, or VOCs were detected by the field monitoring. Groundwater was not encountered in any of the subject excavations.

A single soil sample (PL2C-2-10-O-0045) was collected using hand auger sampling methods at the 5-Axis excavation (Figure 1). Soil sample depth was based on planned excavation depth (<5 feet bgs). The soil sample was collected in general accordance with the Plant 2 *Compendium of Sampling and Analysis Plans and Quality Assurance Project Plans for Boeing Plant 2 Seattle* (Golder, 2004). Neither the Water Jet, Composite Saw, 3-Axis or 5-Axis foundations are located within the boundaries of a RCRA unit and therefore no samples were collected from within a RCRA unit.

The soil sample was analyzed for volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs) and metals. Historical information did not indicate the presence of polychlorinated biphenyl (PCB) sources (past or present) or PCB-containing electrical equipment in the identified construction area, and therefore the soil sample was not analyzed for PCBs. Table 1 summarizes the soil analytical results, presenting those constituents of concern (COCs) detected above their reporting levels for the soil sample. No COC concentrations exceeded the 1999 Plant 2 Preliminary Media Cleanup Levels (PMCLs) or the 2004 screening levels established under RCRA for Plant 2.

The soil sample is representative of bottom soil left *in situ* in the excavation. Excavated soils from the water jet, composite saw and axis excavations were stockpiled, segregated, and covered with plastic sheeting in a discrete stockpile (Crib A) on the Building 2-65 slab. Stockpiled soils will be evaluated by Boeing and will be disposed of or reused as appropriate.

References

Roy F. Weston, Inc. *Technical Memorandum Appropriateness Evaluation Corrective Measures Study Boeing Plant 2,* March 1999.

Golder Associates Inc. *Compendium of Sampling and Analysis Plans and Quality Assurance Project Plans for Boeing Plant 2 Seattle/Tukwila, Washington.* August 2004.

Golder Associates Inc. Technical Memorandum: *Rev 1 Boeing Plant 2, 2-10 New Foundation Excavations.* February 9, 2006.

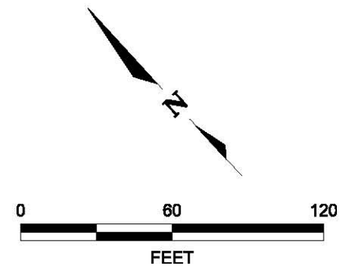
cc: K. Angelos (Golder)

Attachments: Table 1
Figure 1

Detected Constituents in Soil
Building 2-10: Water Jet, Composite Saw, 5- Axis and 3-Axis Foundations
Construction Sampling
March, July and September 2006

Parameter	PMCL	2004 Soil Screening Level	Sample Location: Sample Date: Depth (ft): Sample ID:	PL2C-2-10-O 7/26/2006 4.5 PL2C-2-10-O-0045
VOCs (µg/kg)				
Methylene Chloride	96,000	12,100		11
Metals (mg/kg)				
Aluminum	32,581	-		8,680
Barium	-	93,300		26.8
Beryllium	0.6	222		0.1
Chromium	1,000	-		11.7
Cobalt	-	-		3.7
Copper	36.4	36.4		12.4
Iron	-	-		12,600
Lead	400	1,000		7
Magnesium	-	-		2,390
Manganese	1,146	1,146		117
Nickel	38.2	47.8		8
Vanadium	13,000	9,330		41.0
Zinc	107	101		35.3

Notes:
- = PMCL or Screening Level not available.



LEGEND

- A WELLS
- B WELLS
- RCRA AOCs, OAs AND SWMUs
- EXCAVATION AREAS
- NEW EXCAVATION
- 11 PRECONSTRUCTION SAMPLE NO. & LOCATION: PL2-CS-2-10-011-0020
- NEW SOIL SAMPLE LOCATION

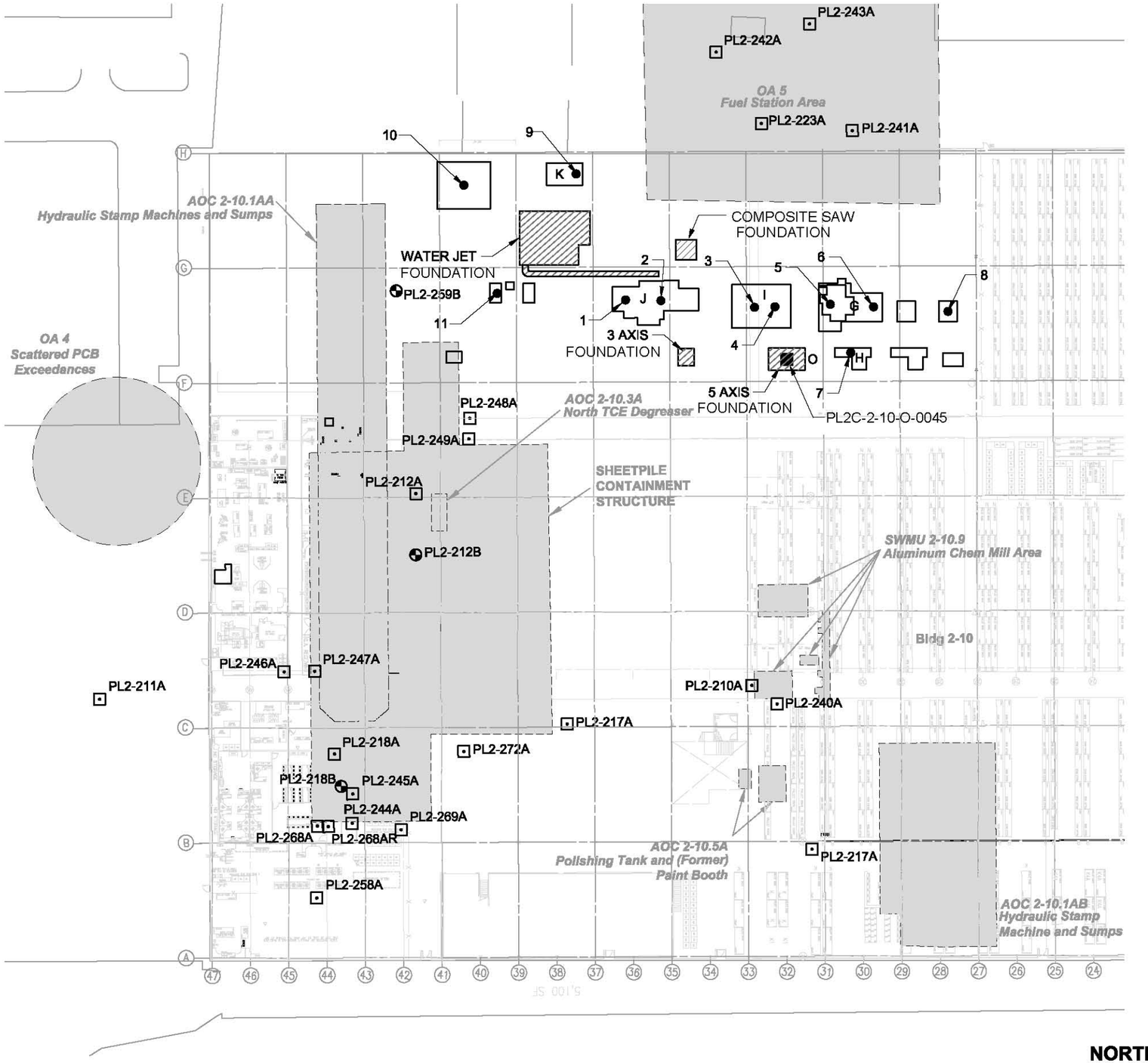


FIGURE **1**

NORTHEAST BUILDING 2-10
SOIL SAMPLE LOCATIONS
WATER JET, COMPOSITE SAW, 5-AXIS & 3-AXIS
FOUNDATION EXCAVATIONS

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